

HUNTSVILLE

water pollution control plant

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ONTARIO WATER RESOURCES COMMISSION

Division of Plant Operations

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ONTARIO WATER RESOURCES COMMISSION
OFFICE OF THE GENERAL MANAGER

Members of the Huntsville Local Advisory Committee,
Town of Huntsville.

Gentlemen:

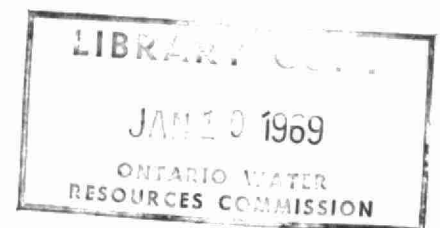
We are happy to present you with the 1967 Operating Summary for the
Huntsville Water Pollution Control Plant, OWRC Project No. 2-0015-58.

Your co-operation with our staff throughout the year has been appreciated.
Only with such co-operation can the war against water pollution be waged
effectively.

Yours very truly,

A handwritten signature in dark ink, appearing to read "D. S. Caverly", is written over the typed name.

D. S. Caverly,
General Manager.



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ONTARIO WATER RESOURCES COMMISSION

801 BAY STREET
TORONTO 5

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VICE-CHAIRMAN

D. S. CAVERLY
GENERAL MANAGER

W. S. MACDONNELL
COMMISSION SECRETARY

General Manager,
Ontario Water Resources Commission.

Dear Sir:

I am pleased to submit to you the 1967 Operating Summary for the Huntsville Water Pollution Control Plant, OWRC Project No. 2-0015-58.

The summary reviews progress during the year, outlines operating problems encountered and summarizes in graphs, charts and tables all significant flow and cost data.

Yours very truly,

A handwritten signature in cursive script, reading "D. A. McTavish".

D. A. McTavish, P. Eng.,
Director,
Division of Plant Operations.

FOREWORD

● This operating summary has been prepared in order to acquaint readers with the management of the project during 1967. The efficiency of the plant's operation is reflected in a general review. Significant financial details are recorded, and technical performance is illustrated by graphs and charts.

The summary should answer two salient questions. Are the project's facilities adequate at this time? And can the project meet future requirements?

The Regional Operations Engineer is primarily responsible for the preparation of the report, and will be pleased to answer any questions regarding it.

Most of the material for the graphs and charts was compiled by the statistics section of the Division of Plant Operations, with the final versions of the graphs being drawn by the draughting section of the Division of Sanitary Engineering. Cost data were provided by the Division of Finance.

It will be evident from the report that all of these groups co-operated with substantial success.

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HUNTSVILLE

water pollution control plant

operated for

THE TOWN OF HUNTSVILLE

by the

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'67 REVIEW

The cost of operating the Hunstville Water Pollution Control Plant in 1967 was \$10,947.58, compared to \$10,925.38 in 1966. The cost of treatment was \$130.40 per million gallons compared to \$112.09 in 1966 but was less than the unit costs of the years prior to 1966.

A total of 83.953 million gallons was treated compared to 97.467 million gallons in 1966. The average daily flow was 230,000 gallons per day, which was slightly below the design plant flow of 250,000 gallons per day. The design plant flow was exceeded 49 percent of the time during the year.

The treatment process operated efficiently and provided the treatment expected. The average BOD concentration of 4.5 ppm and suspended solids concentration of 14 ppm in the final effluent was within the OWRC objectives for secondary treatment plants.

The average sewage strength was 109 ppm BOD and 130 ppm suspended solids and indicates a weak sewage. This is due to the dilution of the sewage by surface water.

A sewer maintenance programme was commenced during the summer. The programme was to include a survey of the existing sewer system, inspection of the sewers and the cleaning of sewers. A truck was purchased and a man was supplied by the Town for the maintenance of the sewers and to assist the operator in the operation of the project. Another man was also made available by the Town when required for sewer maintenance work.

PROJECT COSTS

NET CAPITAL COST (Estimated) Long Term Debt to OWRC	\$ <u>452,388.75</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1967	-
Net Operating	\$ 10,947.58
Debt Retirement	-
Reserve	4,000.00
Interest Charged	25,412.63
TOTAL	\$ <u>40,360.21</u>

RESERVE ACCOUNT

Balance at January 1, 1967	\$ 21,727.53
Deposited by Municipality	4,000.00
Interest Earned	<u>1,310.15</u>
	\$ 27,037.68
Less Expenditures	<u>(2,218.52)</u>
Balance at December 31, 1967	\$ <u>24,819.16</u>

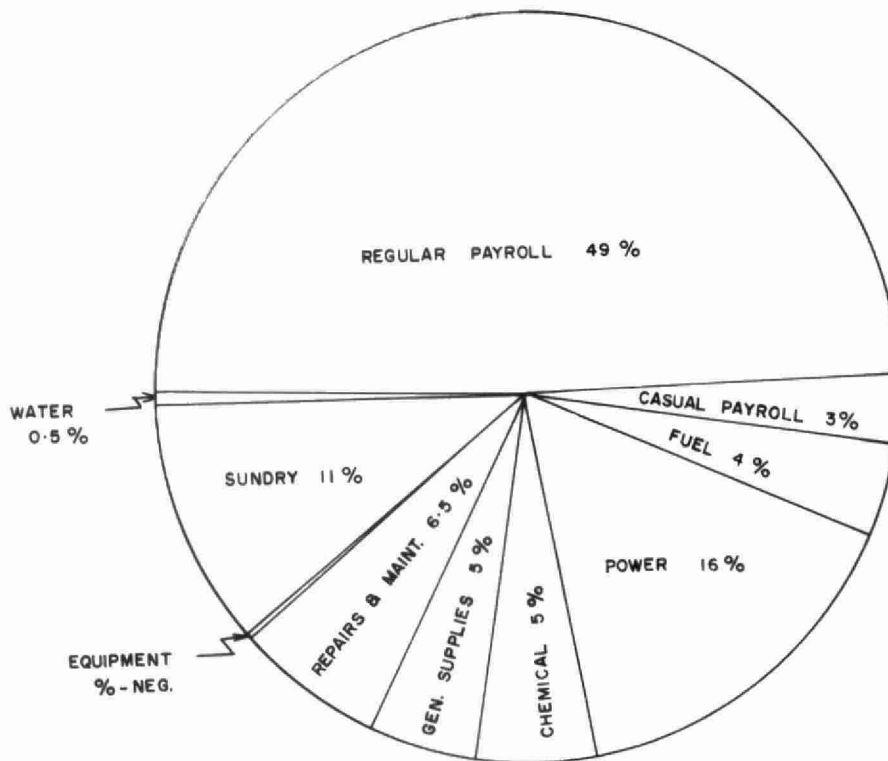
MONTHLY OPERATING COSTS

MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	SUNDRY	WATER
JAN	483.45	396.79	58.37						18.00	10.29	
FEB	778.16	367.84	111.41	48.54	151.40		25.74		26.99	37.50	8.74
MARCH	1160.79	665.97	37.20		178.75	141.75	24.35		71.04	41.73	
APRIL	1014.68	428.52	147.45	99.30	149.92		38.88		46.67	95.20	8.74
MAY	659.43	403.58			141.17		77.81			36.87	
JUNE	766.28	400.42		120.17	191.39		17.75		27.78	8.79	
JULY	912.93	400.42			139.98	141.75	57.42		56.22	117.14	
AUG	750.38	428.51		41.05	126.35		28.53		22.10	94.64	9.20
SEPT	954.39	596.09		14.63	135.56		19.63		152.78	35.70	
OCT	916.51	400.42			134.97	141.75	42.59	6.02	140.33	37.94	12.49
NOV	1200.56	456.61		56.20	124.25		96.58		76.32	390.60	
DEC	1350.02	435.54		89.30	263.37	141.75	81.88		74.71	302.86	10.61
TOTAL	10947.58	5380.71	354.43	419.19	1737.11	567.00	511.16	6.02	712.94	1209.24	49.78

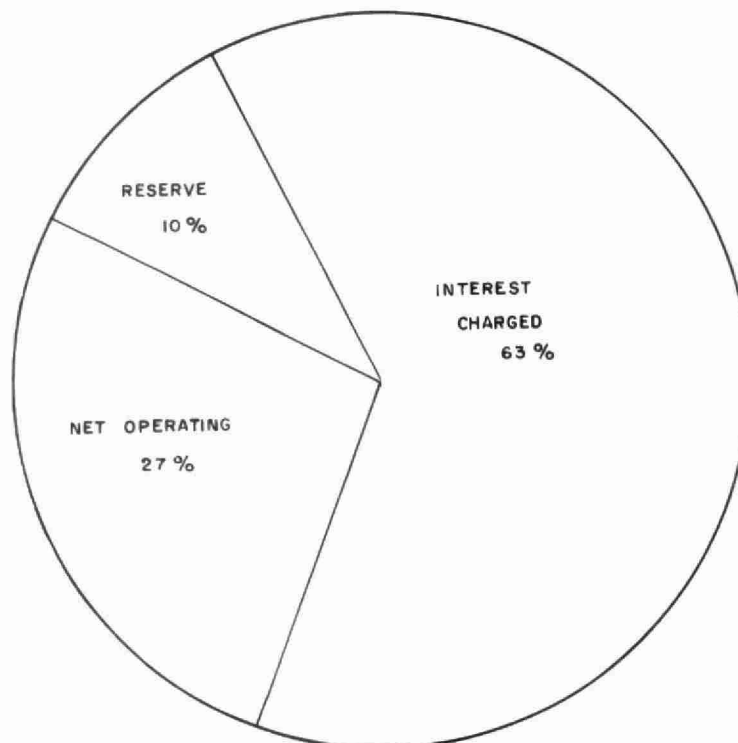
YEARLY OPERATING COSTS

YEAR	M.G. TREATED	TOTAL COST	COST PER MILLION GALLONS	COST PER LB OF BOD REMOVED
1961	36,273	\$ 8914.49	\$ 246.00	19 CENTS
1962	59,580	8458.91	142.00	8 CENTS
1963	65,140	9645.51	148.00	15 CENTS
1964	63,247	10121.07	159.75	12 CENTS
1965	66,647	9949.50	149.29	11 CENTS
1966	97,467	10925.38	112.09	8 CENTS
1967	83,953	10947.58	130.40	11 CENTS

1967 OPERATING COSTS



TOTAL ANNUAL COST



Process Data

Flows

A total of 83.953 million gallons was received at the plant for an average daily flow of approximately 230,000 gallons, compared to 267,000 gallons in 1966.

The design plant flow of 250,000 gallons per day was exceeded 49 percent of the time as indicated on the probability of flow graph.

The plot of the average daily flow shows a general continued yearly increase from 1960 to 1967.

There was still a considerable amount of surface water being treated.

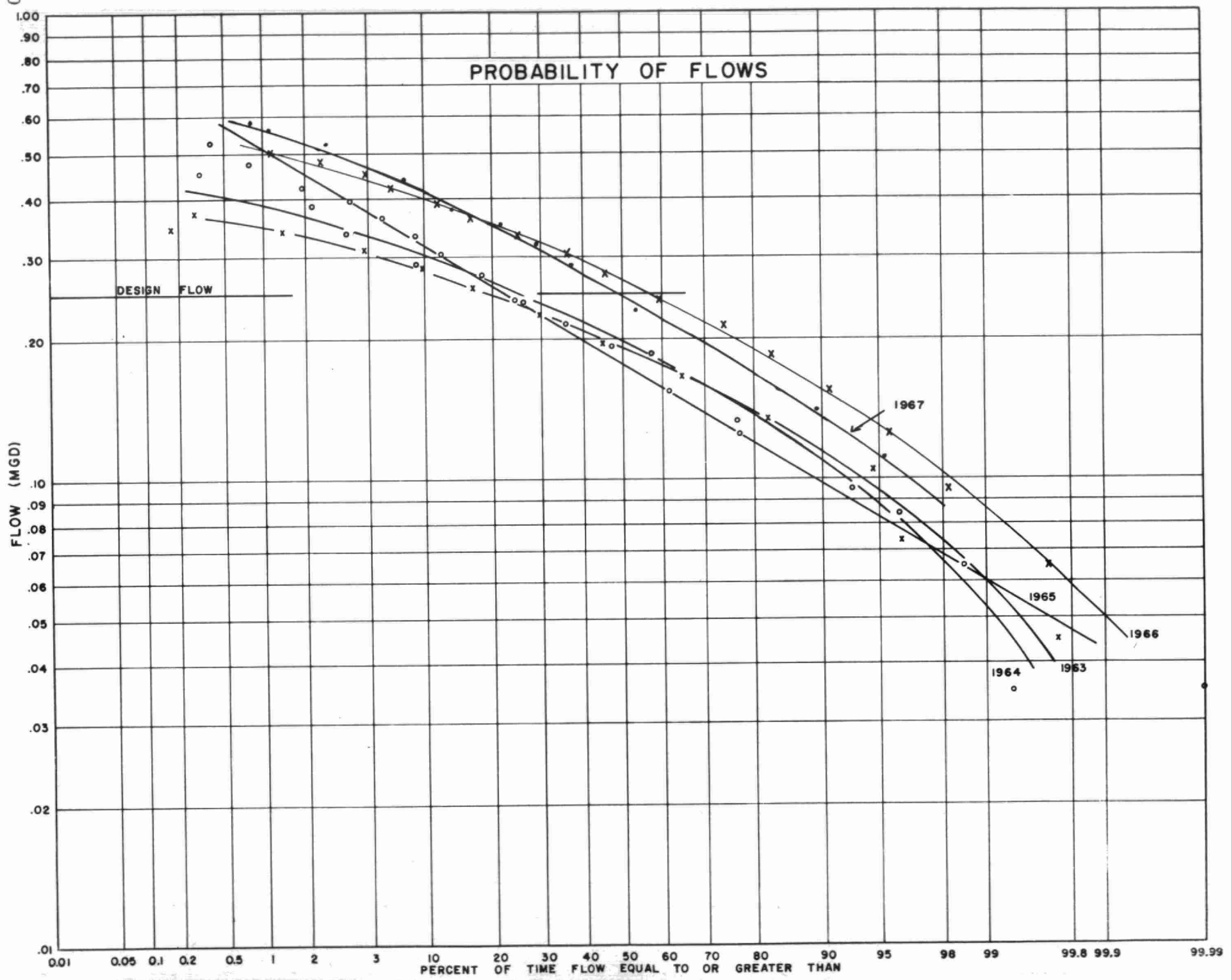
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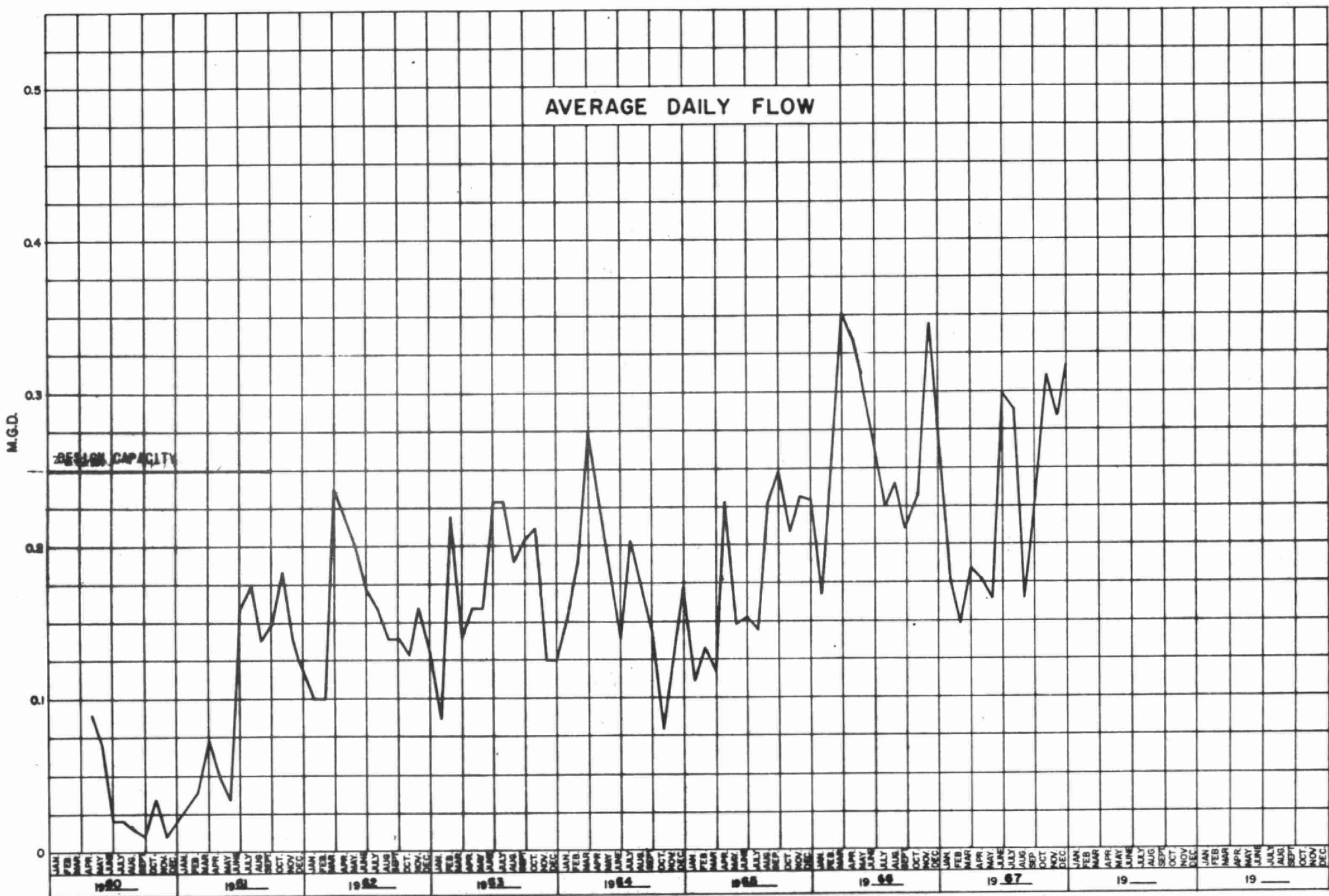
PROBABILITY OF FLOWS

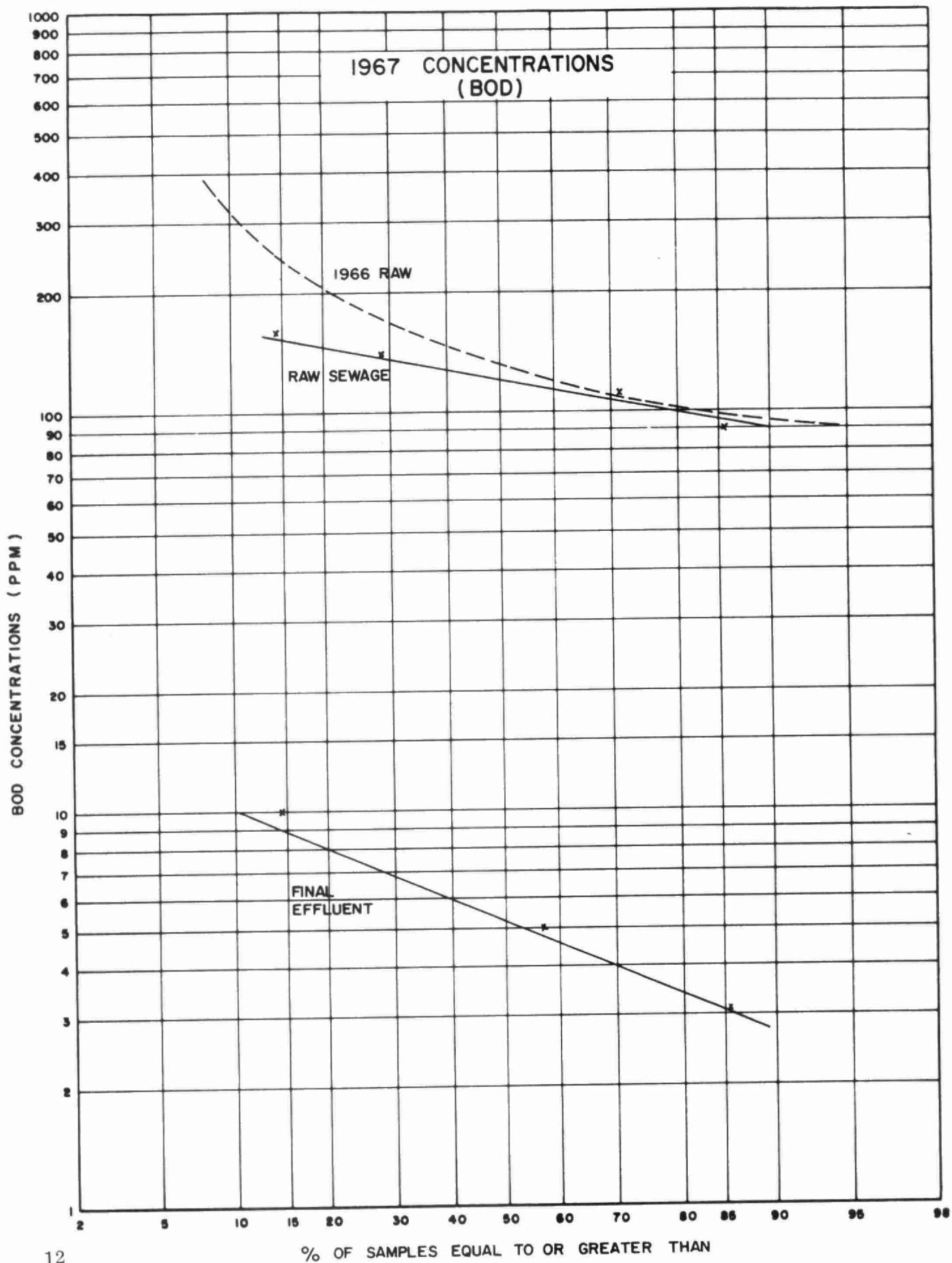
DESIGN FLOW

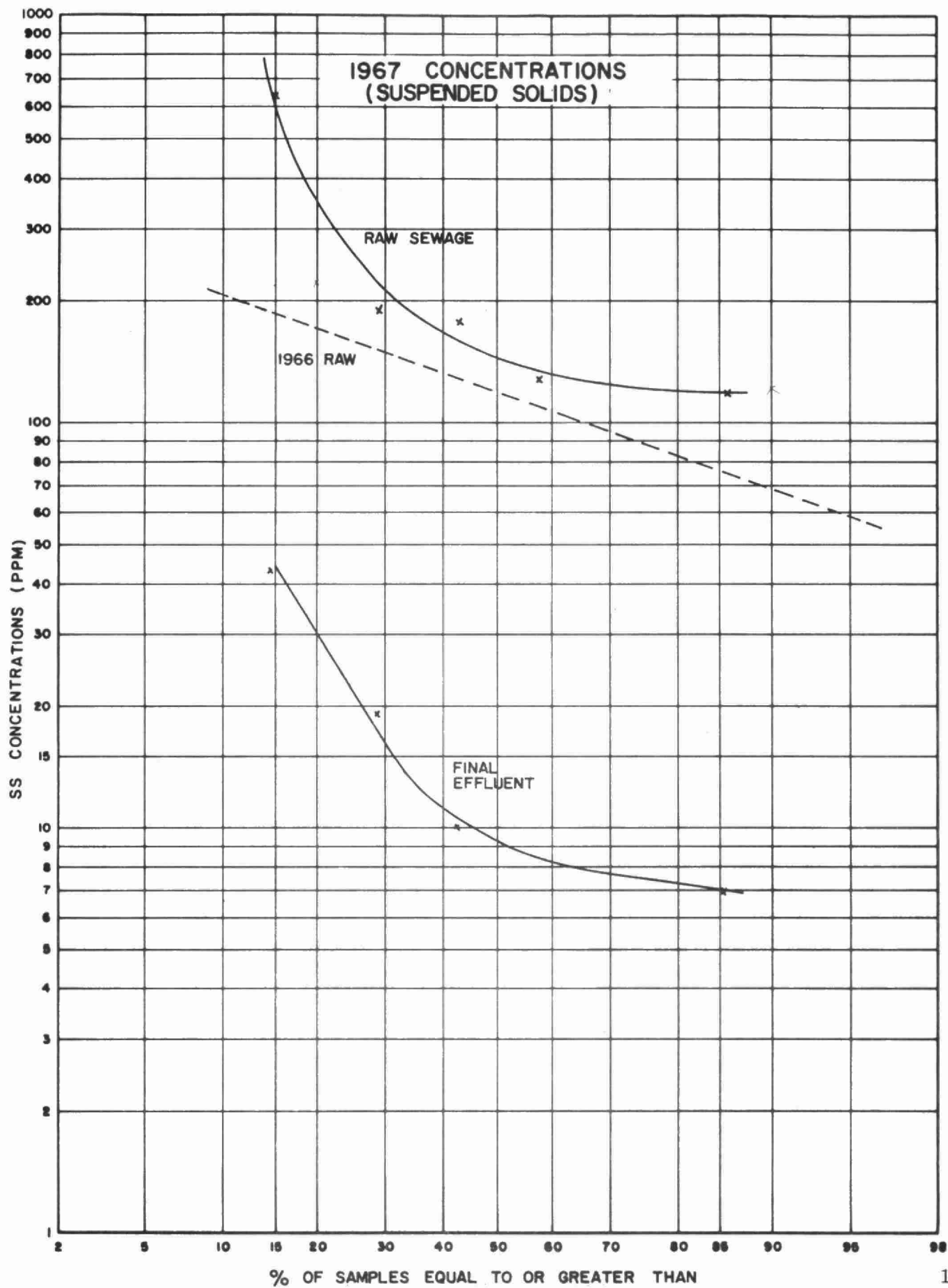
FLOW (MGD)

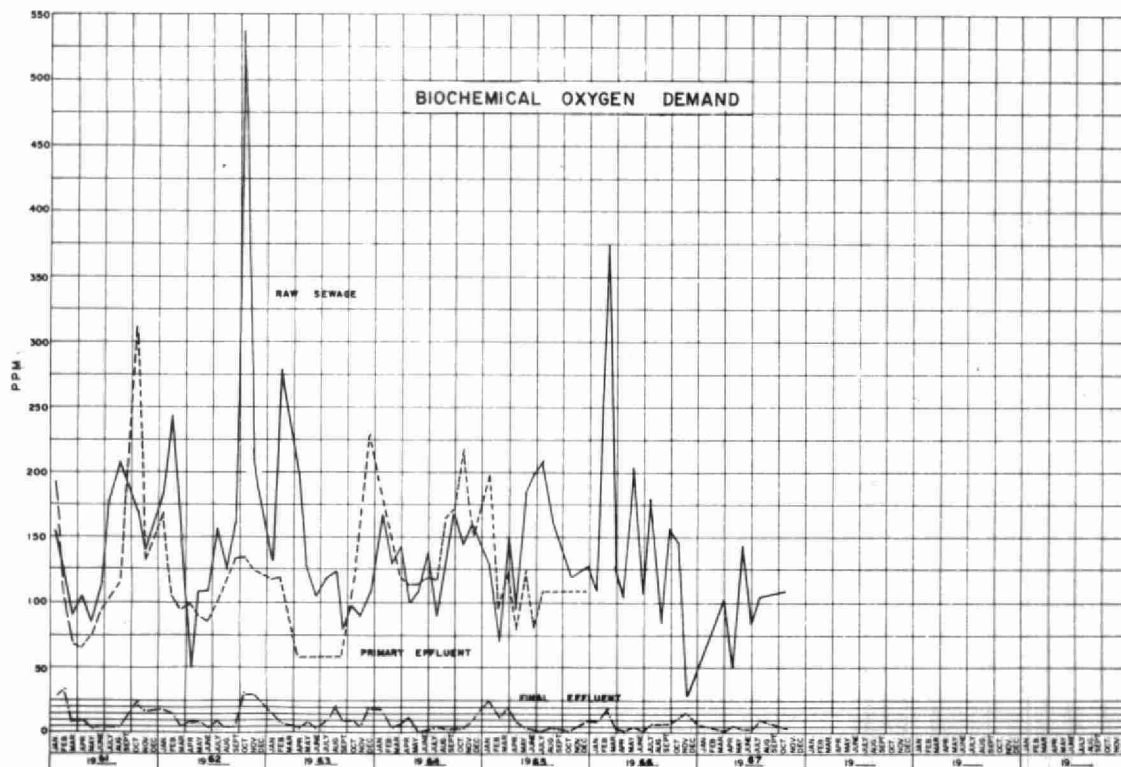
PERCENT OF TIME FLOW EQUAL TO OR GREATER THAN



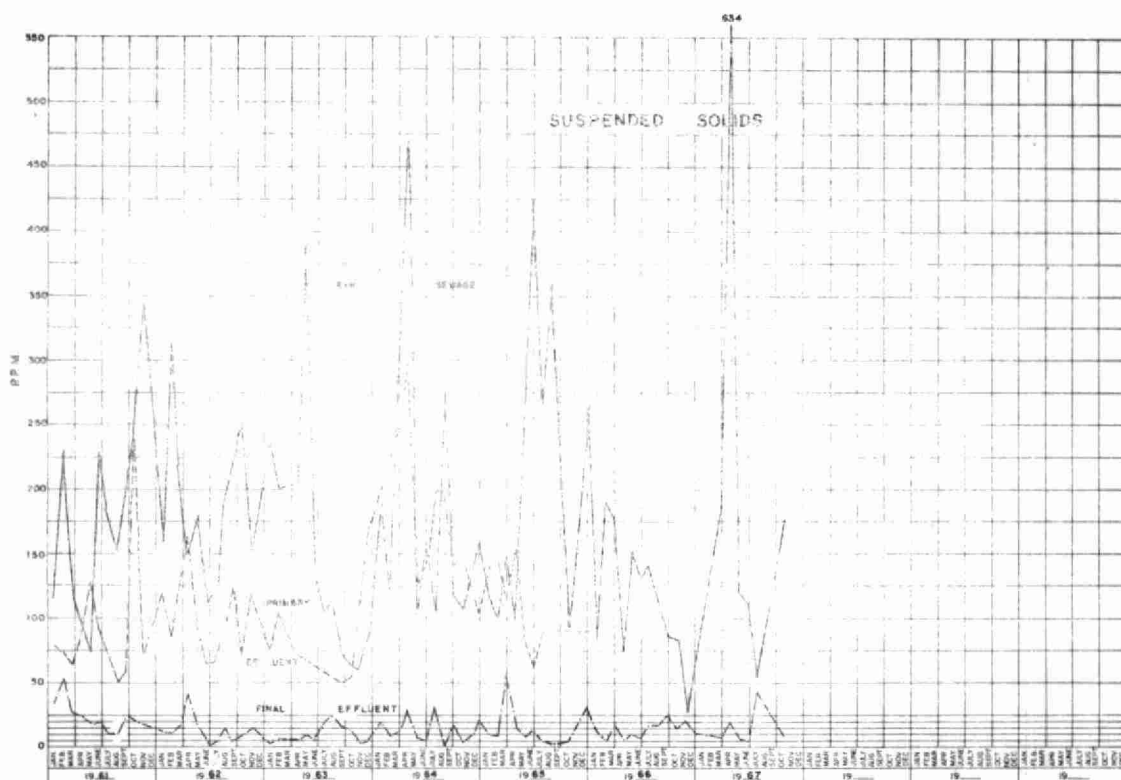








MONTHLY VARIATIONS



GRIT, B.O.D AND S.S. REMOVAL

MONTH	B. O. D.				S. S.				GRIT REMOVAL CU. FT.
	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	
JAN.	-	-	-	-	-	-	-	-	7
FEB.	-	-	-	-	-	-	-	-	2
MAR.	104	1.6	98.5	2.93	186	7	96.2	5.13	8
APR.	50	5.6	88.8	1.18	634	19	97.0	16.34	20
MAY	144	3.6	97.5	3.59	121	4	94.2	2.91	11
JUNE	83	2.8	96.6	3.61	112	4	96.4	4.86	18
JULY	105	9.6	90.8	4.28	54	43	20.4	0.89	39
AUG.	-	-	-	-	-	-	-	-	35
SEPT.	-	-	-	-	-	-	-	-	35
OCT.	110	4.2	96.2	5.11	178	8	95.5	8.21	27
NOV.	-	-	-	-	-	-	-	-	25
DEC.	-	-	-	-	-	-	-	-	10
TOTAL	-	-	-	41.40	-	-	-	52.80	237
AVG.	* 109	4.5	95.9	3.45	*130	14	89.2	4.40	20

* April data omitted in obtaining average for SS and BOD

COMMENTS

The average strength of the raw sewage in 1967 was 109 ppm BOD and 130 ppm SS. There was a small variation in the SS loading, but a significant change in the BOD loading from the 1966 values, which were 114 ppm for SS and 148 ppm for BOD. The final effluent had an average BOD concentration of 4.5 ppm and an average SS concentration of 14 ppm which was within the OWRC objectives of 15 ppm for both BOD and SS.

The average reduction was 95.9% for BOD and 89.2% for SS. An estimated 41.40 tons of BOD and 52.80 tons of SS were removed during 1967 which would otherwise have been discharged to the Muskoka River.

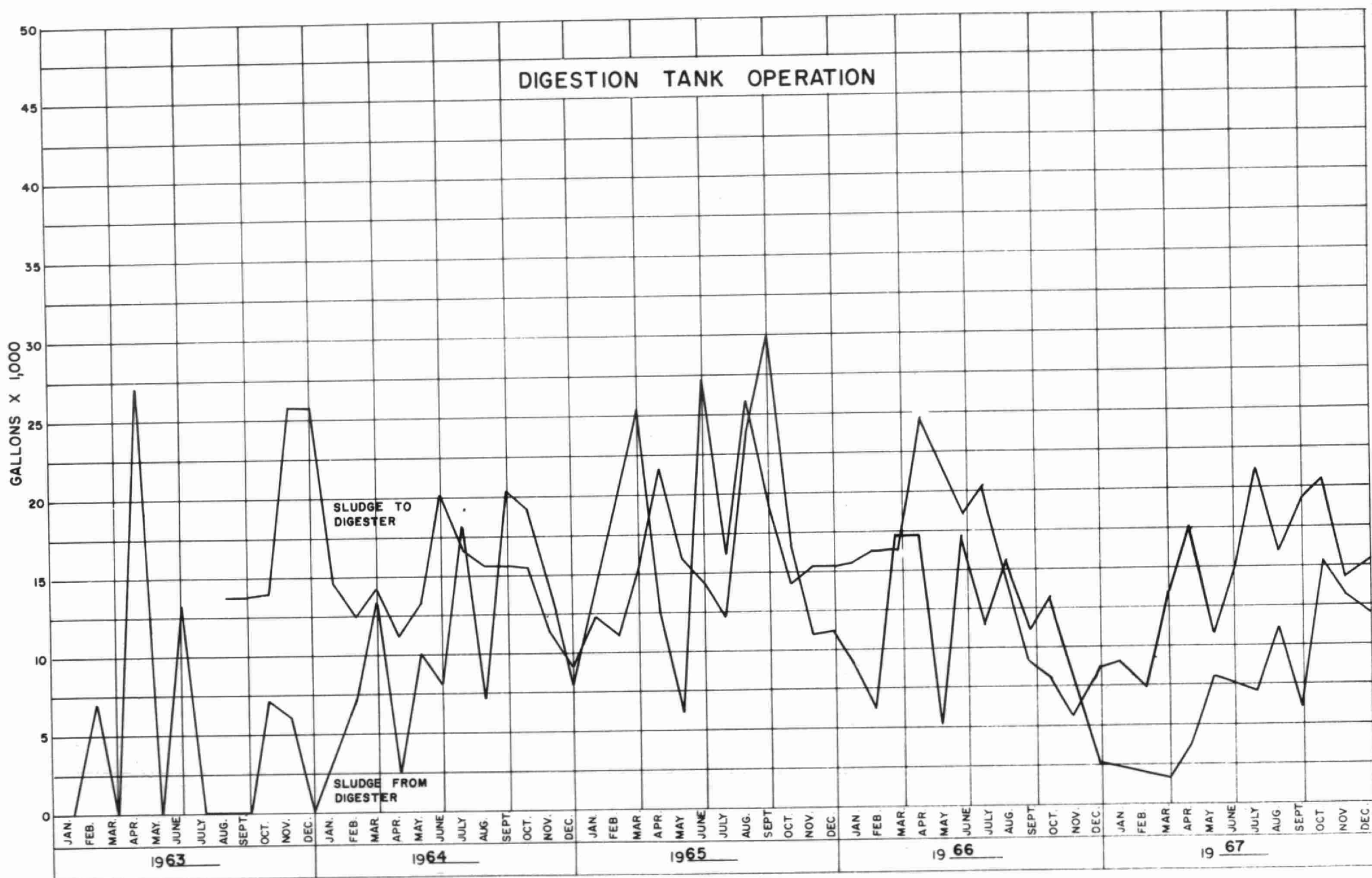
An estimated 237 cubic feet of grit were removed, for an average of 2.8 cubic feet per million gallons of raw sewage.

AERATION SECTION

MONTH	PRIM. EFFL B.O.D. PPM.	ML.SS. PPM.	LBS. BOD. PER 100 LBS. M. L. S. S.
JANUARY	-	775	-
FEBRUARY	-	1164	-
MARCH	104	1427	15
APRIL	50	669	15
MAY	114	711	38
JUNE	83	655	43
JULY	105	610	57
AUGUST	-	586	-
SEPTEMBER	-	723	-
OCTOBER	110	713	55
NOVEMBER	-	703	-
DECEMBER	-	677	-
TOTAL	-	-	-
AVERAGE	118	784	37

COMMENTS

Air is supplied by a mechanical aerator, and therefore the quantity of air required cannot be measured. The average concentration of the mixed liquor suspended solids was 784 ppm for the year. The average aeration tank loading was 37 lbs. of BOD per 100 lbs. of mixed liquor suspended solids.



DIGESTER OPERATION

MONTH	SLUDGE TO DIGESTERS			SLUDGE FROM DIGESTERS		
	1000'S GALLONS	% SOLIDS	% VOL. MAT.	1000'S GALLONS	% SOLIDS	% VOL. MAT.
JAN.	8.655	-	-	-	-	-
FEB.	7.020	-	-	-	-	-
MAR.	13.442	4.16	-	1.685	8.61	-
APR.	17.593	5.95	42.86	3.370	3.96	40.15
MAY	10.716	3.81	60.95	8.086	7.04	34.87
JUNE	14.935	5.87	51.61	-	2.17	42.85
JULY	21.195	5.30	-	7.076	3.20	-
AUG.	15.924	-	-	11.120	-	-
SEPT.	19.147	-	-	6.065	-	-
OCT.	20.621	-	-	15.497	-	-
NOV.	14.395	-	-	13.141	-	-
DEC.	15.260	-	-	12.130	-	-
TOTAL	178.903	-	-	78.170	-	-
AVG.	14.908	5.02	51.80	8.686	5.00	39.29

COMMENTS

A total of 178,903 gallons of raw sludge was pumped to the digester compared to 176,500 gallons in 1966. A total of 78,170 gallons of digested sludge was removed from the digester compared to 125,000 gallons removed in 1966.

The reduction in volume was approximately 56 percent. The volatile reduction was approximately 56 percent as well, thus indicating a good digester operation.

CHLORINATION

MONTH	PLANT FLOW (MG)	POUNDS CHLORINE	DOSAGE RATE (PPM)
JANUARY	5.567	-	-
FEBRUARY	4.133	63	4.29
MARCH	5.730	222	3.87
APRIL	5.313	323	6.07
MAY	5.113	169	3.30
JUNE	9.004	242	2.69
JULY	8.971	404	4.50
AUGUST	5.109	391	7.65
SEPTEMBER	6.991	293	4.19
OCTOBER	9.663	288	2.99
NOVEMBER	8.535	219	2.57
DECEMBER	9.824	224	2.28
TOTAL	83.953	2838	-
AVERAGE	6.996	258	4.03

COMMENTS

Chlorination of the final effluent was practised for 11 months and a total of 2838 pounds of chlorine was used. An average dosage of 4.03 ppm of chlorine was required to maintain a chlorine residual of 0.5 ppm in the final effluent.

LABORATORY LIBRARY



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CONCLUSIONS

The plant is operating near its hydraulic design load but is treating a weak sewage, a result of dilution by surface water. The plant provided satisfactory treatment resulting in a final effluent which meets OWRC objectives .

RECOMMENDATIONS

The program of storm water separation should be continued, so that the effective life of the plant may be extended, avoiding a large capital outlay to treat storm water.

